James A. FitzPatrick
Nuclear Power Plant
268 Lake Road
P.O. Box 41
Lycoming, New York 13093

315-342-3840

New York Power Authority

Michael J. Colomb
Site Executive Officer

December 6, 1999
JAFP-99-0317

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: **Docket No. 50-333**
LICENSEE EVENT REPORT: LER-99-012 (DER-99-2484)

Main Turbine Trip and Reactor Scram Due to Moisture Separator Reheater and Moisture Separator Reheater Drain Tank High Level Trip Signals

Dear Sir:

This report is submitted in accordance with 10 CFR 50.73 (a) (2) (iv), "Any event or condition that resulted in a manual or automatic actuation of any engineered safety feature (ESF), including the reactor protection system (RPS)".

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Gordon Brownell at (315) 349-6360 .

Very truly yours,

MICHAEL J. COLOMB

MJC:GB:las
Enclosure

cc: USNRC, Region 1
USNRC, Project Directorate
USNRC Resident Inspector
INPO Records Center

IE22

PDR ADOCK 05000333

NRC FORM 366 (6 1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
James A. FitzPatrick Nuclear Power Plant	05000333	1 OF 6

TITLE (4)

Main Turbine Trip and Reactor Scram Due to Moisture Separator Reheater and Moisture Separator Reheater Drain Tank High Level Trip Signals

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000
11	05	99	99	012	00	12	06	99	FACILITY NAME N/A	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	83	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

[redacted]

[redacted]										
B	SE	TBG		N						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 11/5/99, at 1051 hours with the mode switch in the "RUN" position and the plant operating at approximately 83 percent power during power ascension, an automatic Reactor scram occurred as a result of a Main Turbine trip. The Turbine trip initiation was a result of high water level trip signals from both Extraction Steam System Moisture Separator Reheater 31MS-1B and Extraction Steam System Moisture Separator Reheater Drain Tank 31TK-2B.

The cause for the excessive water inventory in 31MS-1B and 31TK-2B was the combination of (1) a Feedwater Heater level transient during power ascension resulting in a closure signal to a Feedwater Heater control valve and (2) a failed pneumatic signal line on a 31TK-2B drain line control valve. The degraded line resulted in the drain line control valve failing in the closed position.

Corrective actions include a Post Transient Evaluation that was completed prior to plant start up, an Equipment Failure Evaluation to determine the cause for the failed pneumatic line, and an extent of condition review to evaluate other equipment with potential similar failure characteristics.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	99	012	00	2 OF 6

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

EIIS Codes in [ ]

Event Description

On November 05, 1999, at 1051 hours with the mode switch in the "RUN" position and the plant operating at approximately 83 percent power during power ascension, an automatic Reactor scram occurred as a result of a Main Turbine [TA] trip. The Main Turbine trip initiation was the result of concurrent high water level trip signals from both Extraction Steam System [SE] Moisture Separator Reheater [RHTR] 31MS-1B and Extraction Steam System Moisture Separator Reheater Drain Tank [TK] 31TK-2B.

Moisture Separator Reheaters 31MS-1A(B), located in the steam piping between the high pressure turbine exhaust and the low pressure turbine inlet, function to improve the quality of the high pressure turbine exhaust steam before it enters the low pressure turbine by the separation and removal of moisture. Drain Tanks 2A(B) collect the removed moisture and either return the collection to the Fourth Point Feedwater [SJ] Heater [HX] through Extraction Steam System level control valves [LCV] 31LCV-119A(B), or return it directly to the Main Condenser [COND] through Extraction Steam System high level drain control valves 31LCV-118A(B). Included in the functions of the Main Turbine Alarm and Protection System is a turbine trip initiation on concurrent high water level signals from both Moisture Separator Reheater (level switches [LS] 31LS-117A or B) and associated Moisture Separator Reheater Drain Tank (level switches 31LS-118A or B).

Immediately prior to this event, during power ascension, a water level transient was being experienced in the Feedwater Heaters including the Fourth Point Feedwater Heater. The transient resulted in the closure of drain input lines to the heater, including valve 31LCV-119B from 31TK-2B Drain Tank. Also, due to a failed instrument pneumatic signal line for control instrumentation to valve 31LCV-118B, 31TK-2B Drain Tank high level control valve 31LCV-118B failed in the closed position. With neither drain paths available, water level in 31TK-2B Drain Tank increased resulting in a high water level trip signal from level switch 31LS-118B. Increasing water inventory from 31TK-2B water was then directed back into 31MS-1B resulting in a high water level trip signal from level switch 31LS-117B, and initiating an automatic Main Turbine trip.

Immediately following the Main Turbine trip/Reactor scram, operators entered Abnormal Operating Procedure AOP-1, "Reactor Scram" and Emergency Operating Procedure EOP-2, "RPV Control," and took manual control of the turbine driven Reactor Feed Pumps [SK] to mitigate the anticipated Reactor water level transient which occurs due to shrink. The maximum and minimum Reactor levels and Reactor pressures experienced during the event were:

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	99	012	0	3 OF 6

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

Event Description (cont.)

	Minimum	Maximum
Water Level (Inches above Top of Active Fuel)	141.9	230.5
Pressure (psig)	870	1065.2

A Group II Primary Containment [JM] isolation, a Reactor Water Cleanup System [CE] isolation, and Reactor Building [NG] isolation and automatic initiation of the Standby Gas Treatment System [BH] occurred as a consequence of Reactor water level falling below 177 inches above the Top of Active Fuel (TAF).

At 1055 hours, all Control Rods were verified fully in. The Reactor scram was reset at 1101 hours.

The Post Transient Evaluation determined that appropriate operator response was demonstrated during recovery activities.

Cause of Event

The initial cause for the automatic Main Turbine trip/Reactor scram was the high water level trip signals from both Moisture Separator Reheater Drain Tank 31TK-2B and Moisture Separator Reheater 31MS-1B. The cause for the excessive water inventory in 31MS-1B and 31TK-2B was a combination of factors:

(1) a Feedwater Heater level transient during power ascension resulted in a closure signal to Feedwater Heater control valve 31LCV-119B, and

(2) a failed pneumatic signal line on Extraction Steam System level transmitter [LT] 31LT-118B (31TK-2B Drain Tank Level Transmitter) resulting in control valve 31LCV-118B failing in the closed position.

Instrument signal lines are comprised of copper tubing and mechanical (compression/ferrule) type fittings. The tube failure was adjacent to a mechanical fitting. A preliminary failure evaluation determined the cause for the failure to be a combination of excessive tightening/wear (due to repeated disconnection and reconnection for calibration) of the mechanical fitting (resulting in tube wall thinning), the installation of a mispositioned tubing support bracket which applied lateral force, and normal system vibration. A formal material failure evaluation is being completed.

The cause for the Feedwater Heater level transient has not been conclusively determined. A plant startup monitoring program was developed to evaluate this condition.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	99	012	00	4 OF 6

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

Analysis

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of an engineered safety feature (ESF), including the reactor protection system (RPS)".

The plant responded as designed following the automatic scram from approximately 83 percent power. There were no challenges to the reactor coolant pressure boundary or fuel cladding integrity. This event is bounded by the Normal Turbine Trip with Bypass as described in the James A. FitzPatrick Updated Final Safety Analysis Report (FSAR), including Reactor isolation transients. Reactor pressure, Reactor vessel level, and neutron flux response were consistent with these analysis. Therefore, the safety significance of this event was minimal.

Corrective Actions

1. Tubing and fitting repairs, and instrument tube support removal were completed for the failed transmitter.
   (Complete)

2. An Equipment Failure Evaluation (EFE) is being completed to determine the cause for the failed instrument tubing connection.
   (Scheduled Completion Date 06/30/2000)

3. An Extent of Condition Review was performed to review, identify and correct equipment with similar tube installation and potential failure characteristics. The review included a plant walk down of approximately 300 valves and transmitters, the identification of equipment with potential stress and vibration factors, and the initiation of corrective actions. The results determined that there did not exist an extensive problem similar to the failure experienced.
   (Complete)

4. The Instrument and Controls (I&C) Department will re-emphasize expectations and work practices associated with installation, disassembly and reassembly of tubing/connection.
   (Scheduled Completion Date 12/31/99)

5. I&C technician training lesson plan for tubing/fitting installation will be reviewed/revised accordingly to ensure plant and hardware manufacturer installation requirements and work practice lessons learned are incorporated. Changes to the training module will be provided to I&C technicians prior to Refuel Outage 14.
   (Scheduled Completion Date 09/15/2000)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	99	012	00	5 OF 6

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

Corrective Actions (cont'd.)

6. An Engineering analysis was conducted into the sequence of events and cause(s) associated with the Feedwater Heater level transient. Resulting actions included:

   - verifying proper operation of valve controllers. Valves stroked satisfactorily, however, sluggishness was detected. Two valves required gain adjustments; **(Completed)**

   - inspection of Feedwater Heaters for tube leaks, no leaks were detected; **(Completed)**

   - I&C will evaluate test methodology, setup and tuning of Feedwater Heater level controls; **(Scheduled Completion Date 07/01/2000)**

   - Feedwater System response was monitored during subsequent plant startup. Minor controller adjustments were performed. Continued system monitoring will be performed through the plant's Performance and Trending Program. **(Completed)**

7. The plant is embarking on an overall air operated valve diagnostic testing program in accordance with draft NUREG GSI-158. The Feedwater System control valves have been targeted for the initial testing to commence during Refuel Outage 014.
   (Scheduled Start Date 12/31/2000)

Safety System Functional Failure Review

This event did not result in a safety system functional failure in accordance with NEI 99-02, Revision D.

Additional Information

A. Previous Similar Events: None

B. Failed Component Identification:

   Equipment type: 1/4 inch copper pneumatic tubing

   Equipment ID: Extraction Steam System Level Transmitter 31LT-118B

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
James A. FitzPatrick Nuclear Power Plant	05000333	99	012	00	6 OF 6

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

Additional Information (cont'd.)

C. Extent of Condition:

Following completion of the Extent of Condition Review identified in Corrective Action No. 3, the plant experienced an additional broken air line condition located on a control valve positioner in the Extraction Steam System. Based on this failure, additional corrective actions will be developed to further identify and assist in prevention of future failures.